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ORIGINAL ARTICLES.

DIPHTHERIA AND ITS TREATMENT.*

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The definition of diphtheria is given as "an acute, contagious, inflammatory disease, due to inoculation with the Klebs-Loeffler bacillus, and especially characterized by the formation of false membrane and by secondary constitutional infection. It may attack any mucous membrane and even the skin, but as usually employed the term means diphtheritic inflammation of the oral, faucial, nasal, laryngeal, tracheal or bronchial mucous membrane. The term diphtheroid is applied to such membranous inflammations as are not due to the Klebs-Loeffler bacillus."

This much-dreaded disease has been known for many centuries, and its ravages are well known from the frequent epidemics which have from time to time sprung up in various parts of the world and hundreds of thousands of young lives have been sacrificed to it. What makes it the more difficult for physicians to treat the disease is the fact that so many people are so careless in taking care of the children thus affected, and in this way cause the disease to spread to many innocent little ones.

ETIOLOGY.—The disease is now generally admitted to be caused by the specific organism known as the Klebs-Loeffler bacillus, which is non-motile, slightly bent, and has rounded ends. This bacillus stains very readily by Loeffler's alkaline methylene blue. In a suspected case a culture is made from the throat of the patient under the strictest aseptic precautions by taking a small piece of the membrane and placing it in a tube containing nutrient agar-agar or culture media. The tube is then closed tightly and placed in an incubator or in a warm room. Within from twelve to twenty-four hours a growth will have appeared on the culture media. A very small portion of this growth is placed on a thin cover-glass and spread uniformly with the addition of a small drop of water, dried in the air or over gentle heat. A few drops of Loeffler's alkaline

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methylene blue are allowed to spread on the slide and to remain for fifteen minutes; after the excess stain washed off, and the slide again dried. This cover glass or specimen if properly prepared will show but a very pale blue tint. It is then mounted on the slide in Canada balsam. The mount is then examined by the microscope with a 1-12th inch objective, oil immersion, and the diagnosis is at once easily made.

I admit that this requires considerable labor and time, and not every physician is in a position, owing to excessive demands on his time or otherwise, to make such investigations. Local boards of health should employ a competent person to do this work, as is done in all other large cities. Much trouble and annoyance and many lives would possibly be thus saved. This, in my opinion, is the only way to be sure of the proper diagnosis.

There are good reasons for believing that a large majority of cases classed under the head of croup are really true diphtheria, having its primary seat in the larynx. This opinion is backed by many eminent authorities. Even with the advanced methods of bacteriologic investigations, many physicians still take the view that membranous croup and diphtheria are two distinct diseases. A little work in the right direction would soon set the physician attending such a case on the right track.

Just a few days ago a child died for whom the death certificate was issued to the undertaker as membranous croup and afterward the doctor informed the neighbors that the child had died from diphtheria. There frequently are grave results from such procedures, since people residing near a case reported as croup may allow their little ones to enter the sick chamber or the house where the little sufferer is, and in this way an epidemic may arise. I shall always act as if I considered every such case as true diphtheria until it is proved otherwise, and thus be on the safe side.

The incubation period is from a few days to twelve days, but very seldom exceeds a week. The more virulent the disease the more exaggerated are, of course, the symptoms. The diagnosis, unless investigated bacteriologically, etc., must be made frequently by the presence of other cases. A good point seems to be the spreading of the membrane around the arches of the soft palate, and another across the pharynx. However, I believe that many cases of ulcerated throat, which have yielded quickly to certain treatments, are considered and reported as diphtheria, while they were really only produced principally by the streptococcus pyogenes, which seems to play the principal part in the affection under consideration. A most valuable point in the diagnosis is that when a portion of the membrane is removed a bleeding surface is left behind upon which a new membrane is quickly re-formed with increased virulence as the serum thus exuded gives a splendid media for the bacilli to multiply. The temperature is of vast importance, and when it reaches 103° or 104° F., the symptoms of toxemia are, of course, apparent, and this requires radical treatment.

The pulse varies anywhere from 110 to 140 or 150, never full and strong, but becomes weak, small, and of low tension early in the disease. In the *British Medical Journal* of 1890, an analysis of 100 cases of diphtheria, with reference to circulation, was made. In three per cent. the pulse was unduly slow, and these instances were characterized by vomiting and a fatal issue. A very rapid pulse—also a very dangerous symptom—may occur without any other phenomenon, but may be accompanied by vomiting and extreme drowsiness. Irregularity both in the rhythm and the force of the pulse is not uncommon and not unfavorable. The heart-sounds are feeble and the first sound is short. Disturbances of the intervals between sounds are of great importance, a rapid sequence of the second sound upon the first, but especially spacing of the sounds as heard at the apex of the heart, namely, the equalling of the intervals between the first and second and the second and first sounds respectively, are of most serious import, and indicate a liability to sudden cardiac failure, the most dangerous complication of diphtheria.

These alterations in the sounds of the heart may be detected both at the height of the fever and during convalescence, and are equally important at

either time. In true cases of diphtheria the frenum of the tongue is ulcerated. Among some of the complications and sequelæ may be mentioned extension of the false membrane to the larynx and lower air passages, and to the nose, eye, and ear; formation of false membrane on external wounds and abrasions; extensive ulceration and even gangrene of the tissues of the throat; great inflammation of the neck, albuminuria, anuria or suppression of urine, and uremia; dilatation of the heart; cardiac failure; syncope and sudden death; hemorrhages from ulcerated mucous membrane, thrombosis of veins, affections of the bronchi and the lungs, and paralysis; and among the most common, paralysis of the eye and of deglutition.

Diagnosis.—Almost any throat affection may be mistaken for diphtheria, but this may most frequently happen in cases of acute follicular tonsillitis, scarlet fever, and syphilitic affections. It is not necessary to go into details of each disease in the way of differentiating from other affections.

Treatment.—This is one of the most important parts now to be considered, inasmuch as the medical profession is at variance as to the best method to employ. Much has been said and written in reference to the treatment of this disease, and statistics produced pro and con as to the use and non-use of diphtheria antitoxin. But statistics can be made to fit almost any case and any fancy, as instance the fisherman who spends many hours along the river and returns home with an hundred minnows; they are fish all the same, whether they be large or small. It has been said that there are three classes of liars—the everyday, common liar; the liar from necessity; and the statistician. The latter usually hunts up all the cases to fit his objections, and I, therefore, purposely refrain from quoting statistics, and only want to give my own experience in the treatment of the few cases which came under my professional care, in support of which I intend to produce by the microscope, at the close of this paper, the bacillus as found in each case. This will set aside all doubt as to whether they were or were not true cases of diphtheria.

Case 1.—Robert B., aged seven, was attacked by sore throat and acute tonsillitis. On the first day of the disease I was called to see him. I found pulse about 140, temperature 102° F., an anxious expression, and very difficult deglutition; upon examining the throat I found a number of small, grayish white spots on each tonsil. I gave small doses of calomel as a purge and also aconite to control the fever. The next day I called again and found temperature 103° F., and pulse about 120. I then gave tinctura ferri chloridi with an equal amount of glycerine, ten drops every three hours and ordered a spray of hydrogen peroxid. I continued treatment for several days with but little improvement. As the disease (now the seventh day) had reached the larynx, I requested a consultant and this was granted. I suggested that antitoxin be used. This was at nine o'clock in the evening, and the child could not speak above a whisper and showed signs of toxemia of a grave character. After some little discussion we gave five ccs. of Mulford's antitoxin over the gluteal region, and left for the night. When myself and consultant returned the morning of the eighth day the mother informed us that by two o'clock that morning the patient's throat began to improve and he could again speak above a whisper, and when I spoke to the child he spoke almost with a clear voice. The throat, which had been one sheet of false membrane, began to clear up rapidly, and in forty-eight hours none of the membrane was to be seen, and a rapid recovery followed. The usual remedies were continued for some days and he is well to-day.

Case II.—Della B., aged four years. Father came to my office on a Sunday afternoon and requested me to call and see the little girl, saying she was suffering from croup, which had begun early the preceding week. All the usual home remedies had been used up to this time without avail. When I reached the little sufferer I found that she was cyanotic and almost strangled from the swelling of the throat. I made a culture of the throat, and within 12 hours found almost pure culture of the Klebs-Loeffler bacillus. I employed the usual remedies at once without avail. The

family being poor was not able to purchase antitoxin and none was used and the little one died a day later. Owing to the condition of the child tracheotomy was not deemed expedient. This confirms my statement that nearly all cases of membranous croup are nothing but true diphtheria.

CASE III.—John B., aged six, of same family. Took sick three days later and I was sent for. Found small whitish-gray spots on tonsils characteristic of diphtheria. A culture was at once made and in twenty-four hours the true bacilli of diphtheria were found. In connection with the usual remedies I at once employed ten ccs. of Mulford's antitoxin, and the throat cleared up quickly the case going on to rapid recovery.

CASE IV.—Gertie H., aged eight. Found her suffering from severe sore throat with considerable fever and high pulse. There was the characteristic ulcer of frenum of the tongue and spots on pharynx and tonsils. I made a culture and within twenty-four hours found the characteristic bacillus. I gave five ccs. of Mulford's antitoxin and the throat quickly cleared up, recovery rapidly following.

CASE V.—John E., aged four. His younger brother, aged two years, died prior to my being called, having been attended by another doctor, who pronounced the disease croup. That child died after three days' suffering, and while it was lying dead this case, No. 5, took sick, and within twenty-four hours could not speak above a whisper. Upon examining the throat I found the tonsils covered with a whitish exudate, which was rapidly extending. The pulse was 125° and temperature 103°. I made a culture from the throat, after which I at once injected 10 ccs. of Mulford's antitoxin, and to my gratification the exudate ceased spreading, and within forty-eight hours the throat was entirely cleared up and the case made an uneventful recovery. The Klebs-Loeffler bacilli were found in good numbers.

This has been my personal experience in the treatment of diphtheria with antitoxin, and on account of the excellent results obtained I cannot help but advocate its use in all cases of diphtheria and membranous croup, which are often one and the same diseases.

I do not wish to be understood that I do not or would not use the usual other remedies in the treatment of this disease, especially alcohol freely as the case indicates, but as the antitoxin has given such eminent results, both in my own hands and in those of Tyson, Wilson and many other prominent medical men, I think it should be used in each and every case and give our little patients the benefit of the doubt and get well. Even in the most advanced cases, the percentage of deaths has been greatly reduced by its use.

Nikola Tesla, the great electrician, has just taken out patents for a device for producing almost incalculable electrical vibrations, and the *Electrical Review* gives a full description of the invention and its uses. It was by the use of this device that Mr. Tesla has been able to demonstrate the scientific possibility of producing brilliant illumination by means of vacuum tubes that were not in mechanical contact with the electric source. Under the influence of a current of electricity interrupted sixty million or eighty million times a second the tubes with which Mr. Tesla was experimenting burst into brilliant white light, which was demonstrated by photography to be much more powerful than the arc electric light, although the tubes were entirely disconnected and stood so far away from the exciting coils that Mr. Tesla sat in a large arm-chair between the tubes and the coil while he was photographed by the light of the tubes. No such effect has ever been produced by any other means, and this gives only a rough indication of the ways in which Mr. Tesla's latest patented device may be of use in the arts.

The luminosity produced when ozone and water are in contact is due to the presence in the latter of organic matters, animal and vegetable. Most organic matters are capable of producing the phenomenon of phosphorescence with ozone.—*Philadelphia Record.*

Tramp—Madam, could you give me somethin' to eat? Mrs. Brown—I'll call the dog if—— Tramp—(indignantly)—Madam, I don't eat dogs.—*Judge.*

FUNCTIONAL GASTRIC DISEASES—THEIR DIAGNOSIS AND TREATMENT.

[PART III.]

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EXTERNAL EXAMINATION OF THE STOMACH.

By inspection, little direct information is obtained concerning the stomach, though we may determine the tone of the abdominal walls, the presence or absence of jaundice and ascites, and note if there be distended veins, indicating hepatic sclerosis or some other obstruction to the return flow of blood. We may also learn whether nutrition has been previously influenced by rhachitis or pregnancy, and whether constriction of the waist in women has been expreme. Occasionally, in a dilated stomach, the peristaltic wave is visible.

Palpation affords probable but not positive evidence for or against the existence of a tumor. The nature and anatomical connection of an enlargement must be determined by other means. Succussion, a combination of percussion and palpation, may enable us to detect the wave of a dilated stomach.

By percussion, the gastric tympany can be differentiated from that of the colon, which is about a semi-tone higher in pitch, and from the pulmonary resonance. Where the left lobe of the liver overlaps the stomach, percussion usually elicits gastric tympany. For the purpose of outlining the stomach, the easiest and most delicate method is the auscultation of vibrations set up by percussion or by the application of a tuning fork over the gastric area. A number of students, taken at random, who were not experts at physical diagnosis and most of whom had never even heard of auscultatory percussion, were able, at the first trial of this method, to distinguish stomach from colon, liver, and lung. The method has also been severely tested on the cadaver, and the results verified by the section.

The determination of the gastric area is of prime importance in deciding for or against dilatation. We must recognize three classes of dilatation of the stomach: (1) the high grades due to some organic obstruction at the pylorus; (2) the mild grades due to atony of the muscular coat and to increased pressure from within on account of overeating, overdrinking, slow digestion, and, especially, sub-acid dyspepsia with the formation of gases of fermentation; (3) a sagging or ptosis of the stomach, in which there is the same atony as in the second degree of dilatation, but in which the weakness has not yet resulted in an actual increase in size. In other words, we must consider the matter from a physiologic rather than from an anatomic point of view.

Uncomplicated gastric dilatation is almost an impossibility. The high grades depend upon cancer, cicatrizing ulcer, or some pathological process outside the stomach, causing pressure upon the pylorus. Gastric catarrh almost inevitably develops. The milder grades are usually due to some neurosis, and, occasionally, in fevers or other states of vital depression, an acute dilatation develops in a few days. But whether the dilatation depends upon a primary neurosis or follows some dyspeptic trouble in a purely mechanical way, it will almost always be associated with subacidity. (It will be noted that the words subacidity, superacidity, etc., without qualification, refer to the secretion of hydrochloric acid, not to the development of acids of fermentation.)

The diagnosis of the high grades of dilatation is a comparatively easy matter, and it is referred to elsewhere; in the case of the milder types, we must consider not so much the absolute size

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of the organ as the more subtle question whether there has been undue yielding of the gastric wall. The size of the patient, the habits of eating and drinking, the general muscular tone, the dislocation of the stomach by corsets, the chemism, must be considered. As an arbitrary rule, we may say that the stomach should not descend lower than three-quarters of an inch above the umbilicus, nor should it pass more than a quarter of an inch to the right of the median line, unless in the form of a slender prolongation, representing pylorus and duodenum. These statements apply to the clinical results of percussion, not to the anatomic position of the stomach, which normally includes a considerable area on the right side.

Ewald and, more particularly, Bouchard, who considers gastric dilatation as a cause of a large share of the ills to which human flesh is heir, fail to state the exact anatomic basis on which they establish a diagnosis. Combining the symptomatology recognized by these two authorities, it would often be difficult to differentiate gastric dilatation from subacid dyspepsia, neurasthenia, arthritis deformans and several other diseases. Accepting these premises, it would be quite proper to consider gastric dilatation of mild grade as a common and very serious disease, even if digestion were well performed, at the time of the examination. It does not seem warrantable to ascribe an ultimate failure of digestion or even an organic disease of the stomach, to a "dilatation" that has existed for years without occasioning unpleasant symptoms. Such a view recalls too strongly the gynecologist whose nulliparous patients are all treated for anteflexion of the uterus.

Having once outlined the stomach, the problem presents itself, how best to record our findings either graphically or verbally. After considerable experimentation, it seems best to discard the printed blanks, using, instead, a life-sized tracing of the marks of the dermograph. Such tracings, though rude, are comparatively exact and reveal individual peculiarities as the ready-made charts do not. By means of a style, these rude tracings may be indefinitely multiplied. The verbal description of the human body is not, at present, on a satisfactory basis. The nine regions of the abdomen are not used with uniformity, while most clinicians have so far forgotten their anatomy, that their descriptions are either incorrect or are vague for the sake of avoiding a conspicuous error. Variations in "build," in shape on account of the deformities of tight lacing, rhachitis, etc., in protuberance of the abdomen, are so marked that the different anatomic regions vary considerably. Especially is this the case with the hypochondriac regions.

On the whole, the umbilicus, though not a stable land-mark, is the most convenient one and it does not seem to vary more than the ensiform cartilage and the lower ribs. It has occurred to the writer that a description could be based on a system of right-angled coördinates, centering at the umbilicus. For locating small areas, an even more convenient method would be to consider the abdomen as a map and to use the words referring to the points of the compass, reckoning distances from the umbilicus, the median line, etc. Such a method has the sole objection of incongruity, it has the great advantage of enabling a mental picture to be formed almost instantly from a description.

In high grades of dilatation, the stomach-wall is thickened, so that peristaltic waves, in driving gases of fermentation from one part of the organ to another, occasionally bring the anterior and the posterior walls of the stomach together, thus forming evanescent areas of dullness, in the midst of tympany. It is possible that, in certain cases, the same phenomenon might be observed by palpation, like the Braxton-Hicks sign of pregnancy.

Auscultation of the deglutition murmurs has already been referred to. Except for the time involved, auscultation would afford an excellent means of determining the passage of the stomach contents into the duodenum. This test can easily be made during lavage and it should be tried often enough for physiologic information.

The writer would also propose the following test for gastric acidity, when it is desirable to dispense with the formal examination of the stomach con-

tents. About an hour and a half after a meal, which need not be a regular test breakfast or dinner, but which should consist of a moderate amount of easily digested food, the patient drinks thirty cubic centimeters of a concentrated solution of sodium bicarbonate, while the physician listens over the gastric area. In cases shown by repeated examinations of the stomach-contents to be subacid, or nearly non-acid, no sound is heard. In other instances, including examinations on normal individuals, effervescence is distinctly audible. Knowing, from this examination, that the stomach has a marked acid reaction, —and the organic acids do not produce nearly so much effervescence as does hydrochloric—we have to differentiate between superacidity, a not very common condition, normal digestion, and quite a marked degree of acid fermentation. Such a differentiation is not a very difficult matter.

Manifestly, no such trick can take the place of careful chemical examination. The test is a make-shift when the passage of the tube is impracticable, but it has positive value in noting the progress of a case after one or two thorough examinations. For example, a young woman in whom several examinations have demonstrated non-acidity, and who is, therefore, taking hydrochloric acid one hour P. C., presents herself three-quarters of an hour after taking the medicine, and the application of the test shows marked effervescence. It is decided to omit the acid in order to ascertain if the stomach is able to supply its own demand. Three days later, the test is repeated and no response is elicited. In order to make sure that the effervescence has not been inaudible, a little very dilute hydrochloric acid solution is administered, and a brisk effervescence is heard. The indication to return to acid treatment is plain.

In another case, a patient presents herself for the first time in the afternoon, at a convenient time after a meal, which, however, is not of a suitable character for routine examination. It is desirable to form a general idea of the nature of the case before resorting to the passage of the tube. The stomach is already tympanitic, and the patient complains greatly of belching of gas and of tension after eating. The soda test is followed by moderate effervescence. Here, the acidity must be of an organic nature, and the administration of hydrochloric acid is still called for, to aid digestion and to combat fermentation.

CHEMICAL EXAMINATION OF CHYME.

With the exception of the tests for albuminoids, enough clear liquid can be sucked up with a pipette from the stomach-contents for any ordinary qualitative analysis. Acidity, especially hydrochloric, is most accurately determined from an examination of the unfiltered mass. As mucus may delay the process of filtration, the chyme should be filtered in the cold to prevent the progress of digestive or putrefactive and fermentative changes. A centrifugal machine is a convenient, though not a necessary, addition to the laboratory. Otherwise, the reagents and utensils for the clinical analysis of chyme need no description.

ACIDITY OF THE STOMACH CONTENTS.

Except in the case of a massive hemorrhage, or of aspiration of the intestinal juice by retching, the stomach-contents can scarcely have an alkaline reaction. The fluid from a quiescent stomach is neutral, unless the irritation of the tube has been sufficient to excite a secretion of hydrochloric acid. During digestion, the stomach-contents are, practically, always acid. We must determine whether the acidity is due to acid phosphates, acid albuminates, organic acids or hydrochloric acid. Both litmus and phenol-phthallein react with acid albuminates, acid phosphates change the latter only. A number of anilin dyes serve to distinguish between combined and free acidity, reacting with beautiful color changes only in the presence of the latter. Gentian violet, tropeolin 00, and, most satisfactory of all, Congo red,* are the ones in common use, turning sky-blue, magenta and navy-blue, respectively, with most free acids, the exceptions including carbolic, tannic, boric, picro-nitric, etc., which do not react with all the dyes and which are not usually thought of as acids.

Although a great many organic acids

*Benzo-purpurin is slightly more sensitive than Congo red, turning dark blue.

may be present in the stomach during the digestion of certain vegetables, there are only three which are apt to be present after an ordinary meal and which need to be considered. These are acetic, butyric, and lactic acids. The etymology of the last two words is misleading, all three acids being developed from carbohydrates. Butyric acid may be found in abundance after meals from which butter and other oils have been rigorously excluded, and it is, in no sense, a fatty acid. Lactic acid does not necessarily depend either upon the presence of galactose of milk nor of sarco-lactic acid of meat. It is present in almost all forms of bread-stuffs. Butyric and acetic acids are usually recognized by the odor, but the following differential color tests may be of service, though not always marked when the characteristic odors are present:

	Methyl Violet.	Congo Red.	Tropeolin 00.
HCl and other mineral acids	Sky-blue.	Navy-blue.	Magenta.
Lactic acid	Similar to HCl but less marked.		
Acetic acid	Blue with purple tint.	Blue.	No reaction.
Butyric acid	Blue.	Dirty, purplish blue.	"

The bacillus butyricus can be recognized under the microscope as an arched rod. In some cases, butyric far exceeds in quantity the other acids and the corresponding germ seems to be present in the stomach as an almost pure culture. Two butyric acid bacilli have been described, differing somewhat in thickness. As to the other organic acids, their germs are not recognizable by rough clinical tests. It is said that there are at least six lactic acid bacteria, yet Boas appears to have shown that lactic acid is not produced in the stomach in appreciable quantities except in cancerous disease, although it is usually introduced with food. Penzoldt has demonstrated that the canary yellow tint which lactic acid and lactates strike with dilute solutions of ferric chlorid, with or without carbolic acid to disguise the original color of the ferric chlorid, is imitated more or less closely by cane sugar, grape sugar, alcohol, glycerine and egg albumin, so that Uffelmann's reaction is present throughout normal digestion. The writer has verified the truth of this statement for the substances mentioned, though he has occasionally encountered samples of stomach-contents in which Uffelmann's reaction was not found.

To be explicit, it must be admitted that, with chemically pure reagents, slight differences of color are noticed in applying the ferric chlorid test to the various substances named, but these differences are not sufficiently marked to be of analytical value. To be of practical use, tests as to the presence of lactic acid must be made on the watery solution of an etherial extract. It is now insisted that the ether must contain no trace of alcohol. The writer would suggest the following device: Extract the sample with ether and ignite. After the mixture of ether and alcohol has burned off, dissolve the residue and apply either the ferric chlorid test or Boas' iodoform test. A better chemist than the writer objects that there would still be a trace of alcohol, but, after igniting ether that did contain alcohol and that reacted to the ferric chlorid test, the residue gave a negative result. On the other hand, the ignition does not interfere with the reaction for lactic acid when the latter is present. The writer can, at present, offer nothing of value as to the diagnostic importance of lactic acid in suspected cancer.* He would suggest that it is remarkable if so common a fermentation as that producing lactic acid occur only in one disease of the stomach. Naturally, we should expect lactic acid to be *formed* in most cases of cancer since hydrochloric acid is usually absent, but so, too, should we expect the same fermentation to occur in chronic gastritis and non-acid dyspepsia, in the absence of the normal antiseptic of the gastric juice.

Leaving out of consideration this new sign (?) of cancer, we may consider lactic acid as of no clinical importance.

*Later studies seem to show that the Boas' test is not reliable and that is only a round-about method of testing for the absence of hydrochloric acid.

In general, organic acids are normally present during the first hour of digestion. Later, after the light test meal, free hydrochloric acid should be present in such abundance as to inhibit fermentation, while the organic radicles introduced with food should have been absorbed. It is not usually of importance to know just which organic acid is present, but we should know whether or not the stomach is the seat of fermentation.

Although both mineral and most of the organic acids react with the aniline dyes, the former have the power to strike a crimson tint on evaporation with phloroglucin-vanillin or resorcin and saccharose. Either test is delicate enough to recognize hydrochloric acid (the only mineral acid to be encountered in the stomach, unless from medication) in a dilution of 1:20,000, so that, at the height of digestion, a 1:40 dilution of the stomach-contents should still react faintly. By successive dilutions of the stomach-contents, approximately quantitative results may be obtained. Exact estimations of free and combined acidity, though valuable for physiologic purposes, are too tedious and expensive for clinical use. The writer uses paper wet with the various aniline dyes and with Boas' 3 per cent. solution of resorcin and cane sugar, for the various tests concerning acidity. These papers, though not quite so delicate as the liquid tests, are much more convenient, and, apparently, retain their reactive powers indefinitely.

CARBO-HYDRATE DIGESTION IN THE STOMACH.

The change of cooked starches into maltose proceeds, to some extent, in the stomach, unless prevented by too great acidity, either hydrochloric or organic. The writer has been unable to find any direct statement as to the absolute amount of starch converted. While Bunge estimates the parotid saliva at from 800 to 1,000 c.c. daily, Mitscherlich estimates the entire daily secretion at only 300 c.c. According to Gamgee, 100 c.c. of saliva should convert ten to seventeen grams of starch, so that the achromic point is passed in five minutes. According to Miahle's experiments, each cubic centimeter of saliva should convert two grams of starch into maltose, if ample time is allowed.

The following experiment will show that insalivation is not usually sufficient to insure complete conversion. Immediately after a meal, which had not been sufficient to quench the appetite, the mouth and teeth were thoroughly cleansed. A good-sized mouthful of bread was masticated with unusual care. It was then divided into two parts; one was mixed with a 1:2,000 solution of hydrochloric acid; both were kept at the body temperature. Testing, first at intervals of five minutes, then of fifteen minutes, it was found that starch still remained in each part at the end of two hours and a quarter.

There is a common misapprehension that starch should not be found in the stomach contents later than an hour after a meal. Raw starch remains as such till it is changed by the pancreatic ferment. Even the small amount of starch contained in a test meal may not be entirely converted; in fact, it is rarely absent in the semi-solid portions of the stomach contents of those whose digestion calls for investigation. In a perfectly normal individual, masticating thoroughly, the twenty-five grams of starch contained in the fifty grams of moderately dry bread comprised in the test meal should be digested by the saliva before diastasis is prevented by the development of a marked acid reaction.

There can be no question that starch should be absent from the *filtered* stomach contents removed an hour after the test meal. Its persistence should lead to an examination for superacidity, for salivary insufficiency—which is extremely rare and which is easily tested for, by noting the starch and sugar reactions of pure saliva with a solution of starch—and for improper mastication, which is very common.

It is usually stated that sugar should not be found in the stomach contents after the first hour of preliminary digestion. Penzoldt, however, has shown that we may normally find sugar as late as an hour and a half after a light test meal. Its persistence indicates either that there is not enough acid to inhibit diastasis or that absorption is slow. The latter conclusion may be formed if a

considerable quantity of sugar is present, provided that the analysis has been made promptly, but in a sample of stomach contents that is not highly acid, conversion of starch may proceed, to some degree, after withdrawal from the body, even in the cold. When we consider that the diastatic ferment of the pancreas is twenty times more active than ptyalin, and that the pancreatic juice is nearly as abundant and much more concentrated than saliva (Roberts, Gamgee and others), the question as to how much starch is digested in the stomach becomes relatively unimportant. So long as carbo-hydrates do not ferment into irritating acids, alcohol, and carbon dioxid, we need not trouble ourselves about their digestion in the stomach, except as it throws light on the important questions regarding absorption, acidity, and habits of mastication.

ALBUMINOID DIGESTION IN THE STOMACH.

In considering albuminoid digestion, we are met with the same physiologic and clinical obstacles to categorical statements encountered elsewhere. The combined intestinal digestion completes what the saliva and the gastric juice begin. The first leakings of chyme into the duodenum must contain almost entirely undigested albumin, while it has been shown chemically that comparatively little albumin is fully peptonized in the stomach. Not only does each authority describe differently the process of albuminoid digestion, but the intermediate products of digestion seem to vary according as hydration is effected by pepsin, trypsin, vegetable ferments — unorganized and organized — and acids. Thus, we are justified in disregarding the various elaborate schemes of digestion according to "anti-" and "hemi-moieties," and in studying gastric chemistry as empirics. Civilized man eats but little albumin that has not been coagulated by heat, while rennet curdles most, if not all, of the remainder. Thus, the presence of soluble acid albumin in the stomach contents indicates that digestion has already begun.

This acid albumin is coagulated by boiling. The filtrate is examined by Heller's nitric acid test for albumose or propeptone, which is formed in the digestion of egg and plant albumin, but not in that of meat. Again filtering, what is usually considered to be peptone is precipitated by tannic acid or mercuric chlorid solution. Tannic acid cannot be used if there is starch present, as it also forms a precipitate with the latter. We must be sure, too, that the tannic acid has not been changed by fermentation into gallic acid, whose well-known therapeutic value is due to its failure to precipitate albuminoids. Albumose is more completely separated from peptone by precipitation with ammonium sulphate. Both propeptone and peptone are detected by adding their solutions in a ring above an alkaline solution of copper sulphate. This test may be employed just before boiling in examining for sugar, though strict adherence to chemical rules requires the elimination of albuminoids before testing for sugar.

Penzoldt has shown that, after any kind of nutriment, soluble acid albumin is not present normally in large amount and that it should disappear about two hours after a hearty meal, peptonization at that time keeping pace with the solution of albumin. An hour or an hour and a half after a test meal of a steak or chop, a slice of bread and butter and a glassful of water, there should be a mere trace of albumin, very little propeptone, and a trifle more peptone. Considerable experience is necessary to enable one to judge correctly from these tests. A large amount of peptone indicates, not vigorous digestion, but slow absorption, as is the case if maltose, the soluble representative of starch, is in excess.

Günzberg and Sahli have proposed to lump together the various questions concerning albuminoid digestion and note, by examining the saliva for iodin, the time required for the digestion of an albuminous capsule containing potassium iodid or of a string of fibrin confining the same salt in a piece of rubber dam. Even normally, after a hearty meal, and in mild grades of dyspepsia, after a test meal, it will be noted that the chemical examination of the filtrate may give normal results, while undigested masses of meat may be seen in the stomach contents. Thus, it seems to be largely a matter of accident just

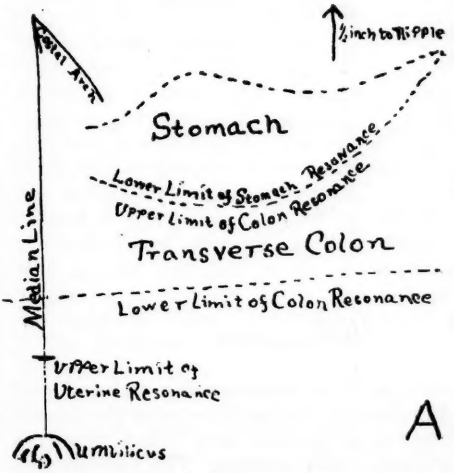
what particle of food will be first attacked, but that, once seized upon by the gastric juice, digestion goes on nearly to completion.

Under the head of gastric absorption, the writer has referred to an accidental experience with this test, in which several dyspeptic patients dissolved an albuminous capsule in from thirty to sixty minutes. There is no assurance, however, that other albuminous particles fared so well; while in some of these cases acidity was shown to be below par. We must conclude that there is no royal road to a diagnosis, and that the direct investigation of the stomach contents cannot be superseded by the examination of secretions and excretions for artificially-introduced chemicals.

Gastric digestion may be divided into three stages: A preliminary hour in which starch, sugar, organic acids, and the lower grades of albumins preponderate, while hydrochloric acidity is gradually reaching the free point; an hour in which digestion is at its height, with organic acids absent and carbohydrates appearing in the semi-solid masses of food, if at all, while hydrochloric acidity has reached its maximum and albuminoids are more and more completely peptonized; a last stage in which absorption removes peptones almost as soon as formed, in which the gastric glands are becoming quiescent so that acidity is declining, while the chyme is passing into the intestine in comparatively large quantities. These stages merge into one another; they vary in absolute and relative length according to the bulk and the kind of food taken, so that in attempting thus to summarize the processes of gastric digestion, the light test meal must be kept in mind and the statements made must not be accepted without necessary qualifications according to circumstances.

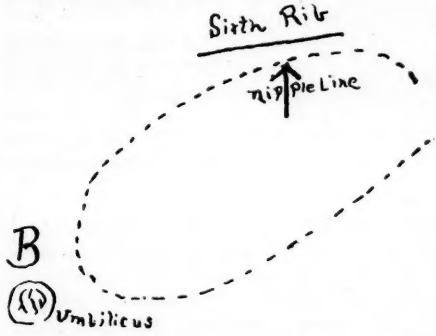
ILLUSTRATIVE CASES.

A. represents the stomach, colon, and the upper limit of the uterus, as marked out by auscultatory percussion two hours after a meal. The patient was a primigravida, eight months advanced. The chart is an example of what must be considered a normal dislocation of



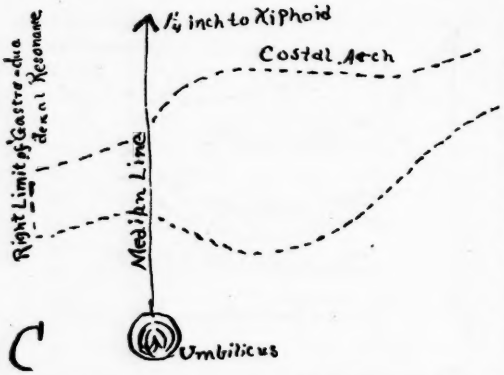
the stomach. See page 338, The Use of the Stomach Tube.

B is an almost typical illustration of the third degree of gastric dilatation, occurring in subacid dyspepsia with fermentation. The patient was a neurasthenic young man who had suffered with dyspepsia for years. There was the usual slight complicating catarrh. While the gastric area is not absolutely



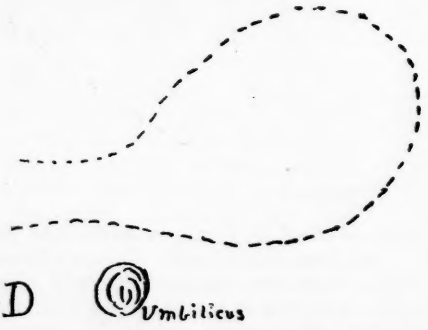
large, it must be borne in mind that the tracing was taken eight hours after a meal, when the stomach should normally occupy a space of about half the present dimensions, while its lowest point should be at least an inch higher than that shown in the diagram. A few days later, lavage at noon, brought away remnants of food eaten at dinner the evening previously—confirmatory evidence of the existence of dilatation and atony.

C shows to an unusual degree the continuity of the gastric cavity with a



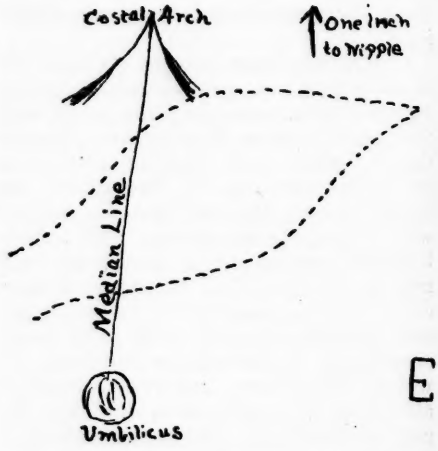
narrow tube representing pylorus and duodenum. It also illustrates the nearly horizontal gastric area often found in stockily-built persons. The patient was a woman of thirty-five, short, fat, and large-waisted. She had suffered about a year with fermentative dyspepsia. The tracing was taken an hour and a half after a meal, at a time when the patient had already been greatly benefited by a course of treatment with hydrochloric acid. The same duodenal prolongation was observed at several examinations made for the purpose of verifying or disproving the remarkable result here indicated.

(See page 338, "The Use of the Stomach Tube;" page 357, "The External Examination of the Stomach.")



D is a contour taken immediately after lavage and the distension of the stomach with menthol vapor. The patient was a young woman suffering with subacid dyspepsia and slight concomitant catarrh.

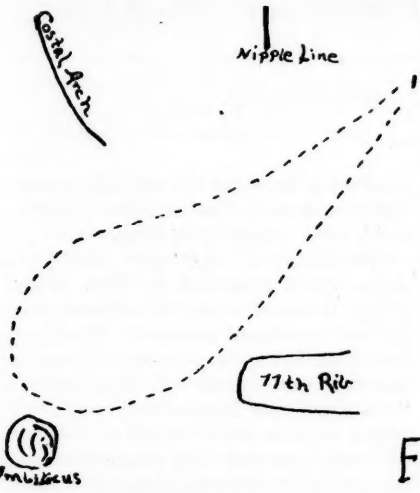
E is the contour of a woman of forty, who has suffered for years with occasional attacks of subacid dyspepsia and who has had "nervous prostration." Her dyspepsia is essentially atonic, due to fatigue in her work as nurse. Although the gastric area is detectable much to the right of the median line, it corresponds so closely with the anatomical location of the stomach that it can scarcely warrant a diagnosis of dilatation. We may assume, however, that the right portion of the organ is more closely in contact with the anterior abdominal wall than is usual. The dyepepsia here is almost entirely chemical. We must bear in mind that the tracing was taken half an hour after a glassful of milk was swallowed, so that there would normally be present a con-



siderable amount of air introduced with the food.

(For *D* and *E* see page 357, "The External Examination of the Stomach;" page 338, "The Use of the Stomach Tube.")

F represents the stomach of a patient recently seen in consultation. His illness dates back two years. He has several times vomited small quantities of grumous blood, and the vomiting of sour stomach-contents and mucus is a frequent occurrence. The tracing was taken four hours after a meal, consisting only of a piece of toast. Thus, the stomach is relatively empty and its great relaxation warrants the diagnosis of relative dilatation, if not that of the second degree. The atony and ptosis are also indicated by the inclination of the gastric axis, which, in a sparely

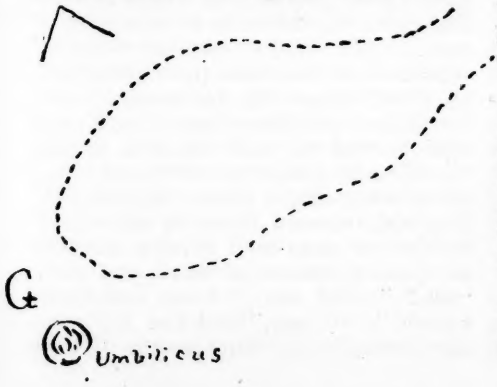


F

built, long-chested man like the patient, should be ten or twenty degrees nearer the perpendicular. The tentative diagnosis of cancer had been made, but in the absence of palpable tumor the duration of the disease without very marked cachexia rather contradicts this view of the case. The liver being slightly contracted with the additional history of hemorrhoids, we may diagnose hepatic sclerosis, and we may assume the gastric catarrh and dilatation to be secondary to the portal obstruction. In such conditions, superficial ulceration of the gastric mucous membrane is not uncommon, and thus the hemorrhages may be accounted for. The use of the tube is refused at present, so that Boas' test cannot be employed.

(For *B* and *F* see page 357, "The External Examination of the Stomach.")

G is copied from two tracings of the same stomach. The patient was a man of thirty, living in Pennsylvania. The first was taken September 13, the other November 17, each at about two hours after a meal. In the latter only is the duodenal prolongation visible. The erection of the axis of the stomach with inflation is well shown by a comparison of the two outlines. Each shows plainly the indented greater curvature. *G* illustrates certainly, as *F* does probably, the occurrence of slight gastric dilatation as the mediate result of hepatic sclerosis. (See page 338, "The Use of the Stomach Tube;" pages 357 and 358, "The External Examination of the Stomach."



If it is finally proven that electric lamps burning all night near trees have the effect of tiring them out by keeping them awake, the discovery may be made usefnl in a variety of ways. Undoubtedly everything in nature needs rest. The philosopher, who deprecates all things of to-day, and sighs for "good old times," will find that the retrogression of the human race is due to a want of rest, and the want of rest is due to the presence of the electric light; by progressive logic he will finally conclude that electricity is a curse rather than the blessing we have been taught to believe it. Such people will always have enough misery on tap to insure their happiness. For the rest of us, we will plant more trees, if the old ones die, and will turn on more light.—*Electrtcal Journnl.*

"Science," says a distinguished scholar, "must be candid, even at the expense of the essential probability of its own deductions." What this somewhat learned sentence means may be gathered from an instance of scientific candor.

A gentleman had bought a decorated vase which had been represented as an antique. After it had come into his possession he submitted it to an archæologist to obtain judgment as to its authenticity. The archæologist examined it with great care and made the following report:

"The painting of this vase bears every evidence of being very ancient, whereas the vase itself is undoubtedly modern."
Pittsburg Bulletin.

THE NEWSPAPER, THE PROFESSION AND THE QUACKS.

S. S. TOWLER, M.D., MARIENVILLE, PA.

It rained, and the wind dashed the drops against the windows, flung them with a swish down the door, and whistled down the chimney, as my medical friend and myself stepped into my private office, to talk and read. It was an ideal night outside for the insurance of contentment and comfort inside. Who my friend was, does not matter, suffice to say, that he was brainy and good, notwithstanding the fact, that his greatest weakness, was the strength of his profanity. I dropped into a low seat, and he took possession of the "Surgical Chair," lit a cigar and opened the daily paper. This hint was not lost on his host, so I looked over a medical journal. After a few minutes' quiet, I said, "Doctor, listen to this," and read as follows:

WHY THE QUACK PROSPERS.

The *Post-Graduate* explains this as follows: "The fact is that the United States of America are not yet sufficiently civilized for the daily newspaper to have a real appreciation of what the profession of medicine does know and does not know. In other words the average reporter, and possibly the average editor, still believes in clairvoyants, the seventh son of the seventh son, the bone-setter, and the healer who neglects the barber and cultivates the sublime art of curing disease which does not exist."

"Now, old fellow, how does that strike you?"

My friend laid himself gently back preparatory to the deliverance of a most weighty and grave comment, when the middle of his chair "bucked," the head dropped to an incline plane, the foot fell to a right angle, while he rolled to the floor. After picking himself up, expressing a warm opinion of the chair, and declaring, that if it were not a "set-up" job, it certainly was an up-set job, he settled down comfortably, with everything "fixed and set."

That little episode doubtless had something to do with the range of his opinion and delivery. Here you have it:

"The daily paper hasn't an appreciation of what the profession does know, hasn't it indeed? Just listen to this, and weep because we are not in the delightful sketch that I read you." He read, with comments, thus.

Guided by X rays provided by Mr. A, a lancet operated by Drs. B and C (Why doesn't it say whether operated by foot or hand power? The technic is changed from the usual, "plunged the lancet"—true, two of them could not "plunge" one lancet very well, yet we ought to have more detail as to how two of them operated this particular knife.) has probably restored sight to little M.—of this city, (Notice the caution, conservatism, I ought to say, of this medical newspaper expert, "probably restored," ah!). Two years ago little M.—fell from the porch of her home and struck upon her head on a tree stump. When she was picked up her skull was apparently uninjured, and the scalp wound healed quickly. There was no further trouble until two months ago, when she complained that there was a mist before her eyes. In a week she was totally blind. Dr. B was summoned and his great experience told him that there was something wrong with the optic nerve. (Look at that now, there's a set-back for all the young fellows, nothing but "great experience," fifty years, or more of it, I judge, could tumble to that.) The old accident was to blame. Dr. C was called into consultation. "Let's try the X-rays," they said—(Ha! wasn't that a stroke of genius now?)—and two weeks ago the little girl was taken to a private laboratory. Mr. A got out his Crookes' tubes and his batteries (God bless him, he didn't forget his batteries), while Dr. B used the fluoroscope. The X-rays were turned on, and focussed against the side of the child's head (Lord! Dr., think what might have happened if they had focussed them on the sole of the foot, or some such horrible mistake as that,—presence of mind, you see). "Oh!" cried she, "I see something round!" "I see," said Dr. B., peering through the fluoroscope. (There

has been no intimation that the fluoroscope manipulator was blind, so why shouldn't he see.) He could see the bone pressing down on the little girl's brain, and a dark shadow between the convolutions (first, second and third, I expect).

IT WAS A BLOOD CLOT! (cold chills). The physicians decided upon an operation, and the girl was taken to a private hospital. Several physicians were invited to witness the operation (the reporter *doubtless* went on his gall), and last week it was performed. Dr. B. and Dr. C. removed the top of the child's skull (after the method of Grey, I expect). The X-rays had told the truth. There was a little bit of bone pressing upon the anterior portion of the brain (seems to be too much bone for amount of brain, doesn't there?) and a blood clot that extended down through the membranes (all of them, of course) and pressed on the optic nerve, causing blindness of both eyes. Bit by bit, the clot was carefully cut away, and meanwhile the skull was trephined, two or three large buttons of bone being taken out so they would not press on the brain. (You catch the idea, doctor? While Dr. B. was cutting out the clot "bit by bit," Dr. C. was cutting buttons out of the top of the skull that had been previously removed). Then the little patient was allowed to come out of the ether. (That was both kind and thoughtful. They might, now, in their excess of joy over this new kink, have left the ether to have come out of her, poor child!) She was taken home, her eyes still bandaged. (Curious they forgot to bandage her head). It will be impossible to tell, etc., etc.

"Stop your infernal grinning, and tell me if that is not a complete answer to the statement you read. Don't the newspapers appreciate the profession? You bet your last yard of gauze they do—when they are paid for it. Again, think of what your level-headed friend in ——— wrote you the other day: "The sectarians never slumber nor sleep, they get the ear of all the newspapers," and so on. Why, I tell you the newspaper man appreciates the man that "sees him," and all these fellows make it count. I know that you seriously object to swearing, but I tell you that the doctor who doesn't swear does not comprehend the situation; if he did, he would swear too."

The above views of my friend illustrate one side of the question. It is true that a reporter—friendly for personal reasons or for a donation—can be got to write up reports like the preceding. It is also true that many of our sectarian brethren manage to use the press to a large extent. One thing noticeable about the latter is that while the personel of the interviewed doctor is never neglected, yet always and ever the 'pathy stands out boldly in all that's described. He never forgets his school, contriving always to leave the impression that while he is a very superior personage it is because of his 'pathy. It is not uncommon to see such a one calmly claiming everything, from vaccination down to the latest "serum," as resulting from 'pathic principles. It is unfortunate for the sake of scientific medicine that many bright, educated, and cultivated sectarians who really despise trickery and assumption do not become one with the progressive class. Such a course is due both to themselves, the profession, and the public.

The distinctive feature of sectarianism is taken to the newspapers; the newspapers do not run after it. The same line of claiming public notice is used by all classes of physicians or quacks who seek for newspaper notoriety. A great mass of this stuff is paid for, and gladly paid for. The "regular" seems to think that his school is discriminated against by the newsmen. So it is, judged by amount of publication alone. I notice, however, that the "regular" who works for it gets it all the same. Unfortunately, about the only regulars that do work for it are those who are after the personal puff more than eulogy of their school or profession. I do not see any reason why the newspaper influence should be left to the quack, notoriety seeker, or any special class of physicians. I do not think that personal puffs should be sought after in order to offset the quack or a rival school.

I do think, however, just as I have written in former articles in The REPORTER, that if we are going to educate people, we must do it through the most available channel. Every once in a

while, some one writes an article for a medical journal, or reads a paper before some medical society, on the "Quack" etc. The public never sees it, yet we go on growling at the newspapers and the public, just as if we had put forth an intelligent effort to educate them. Our articles are full of suggestions about "the doctor educating the public," when the fact is, that it is only to a limited degree that he can do so. What passes in private conversation, has but little effect, if any, on the masses. This age is past that mode of conveying thought for general use. Again, no really busy and intelligent physician wants to be "talking shop," all the time.

There is only one way to educate them, so far as professional effort is concerned. That way is to make medical organization, so thorough, strong and active, that its demands will be heard. An organization that will sink the personal, keep itself in the back ground, working as a mighty whole for public weal, and showing force in numbers and intelligent work, will get the ear of the newspapers, without money and without price. The profession has put "the mark of its high calling," in wiping out from the face of the earth, the very diseases the cure of which brings them bread and butter. That is high enough plane for any hero to stand on.

The general public does not know this, and will not know it, until that knowledge is *pushed* to the front. That knowledge is not conveyed by notices of "brilliant" operations, of Dr. Smith, or by discoveries of one more, "sure cure," for tuberculosis. It can be done by well written, plainly worded articles on hygiene, advance in medicine, quacks, faith curists, public health, etc. These writings should not be magazine articles only, but should be written for the daily and weekly press, that common but most potent of factors in education to-day. Boards of Health can do much in that line. A standing committee on Public Education in the medical societies can do more. Lastly, a governmental department of public health could do wonders. All these can be secured by a thorough, *unselfish*, strictly professional organization, that will "git up and git."

CURRENT LITERATURE CONDENSED.

The Relationship of Pathogenesis, Morbid Anatomy, and Diathesis.[1]

To secure a semblance of rationality in our discussion we should first elucidate our comprehension of the several parts of our subject.

Pathogenesis is said to mean "the study of the origin and development of pathologic processes." Morbid anatomy "of the changes in the tissues and fluids of the body appreciable to the naked eye, or with the aid of the microscope." Diathesis "the inherited or constitutional predisposition to certain diseases." Pathogenesis is at times a matter of mathematical computation, effects directly traceable to their initial causes.

The origin of pathologic processes is so obscure or so antedates the medical man's appearance upon the scene, or is so enshrouded with superstitious ignorance that to attempt reasoning ends in conjecture. The skill possessed, or the time expended in fathoming pathogenesis opens the way for the clearer conception of morbid anatomy. Suspecting the origin as learned in pathogenesis, realizing the deviation from the normal, our conditions are approached so methodically, and knowing for what we search we recognize the changes in the tissues and fluids with the naked eye, or with the aid of the microscope, and are thus getting ready for some practical benefit.

Considering what is wanted, we look a moment at the means, forces, and material combined, called the animal economy. The vital principle, we let rest on its throne of mystery. Its potency we feel and know, the nerve energy, manifest cell action, and power of mind over matter, we relegate to the theorist. The material, the which and what, we at-

1H. H. Weer, M.D., Bluffton, before the Indiana State Medical Society. Published in the Journal of the Medical Sciences.

tempt to correct, improve and direct, brings us face to face with the study of the origin and development of pathologic processes.

Proper material in proper environment produces normality. Improper material includes the Aplastic, Cacaplastic, and Euplastic. Aplastic material is not capable of forming, or is not organiplastic. Cacaplastic material is susceptible of only a low degree of organization, as the indurations resulting from low or chronic inflammation, fibro-cartilage, etc., etc. Euplastic material is capable of becoming organizable in a high degree—as in false membranes resulting from acute inflammation in a healthy person.

Considering the elements as we now have them, patent and latent, our attention is called to environment. This being natural the eliminative efforts of nature or normal retrograde metamorphosis furnishes the solution. Otherwise comes predisposition, defective vital tendency, atavism, obscure psychological forces, unbalanced organisms and organic lesions. Studying the where, with, the origin thereof, and the tendency thereto, forces the issue as we confront it in the sick-room.

For instance, functional endocardial or blood murmurs, are the result of changes in the natural constituents of the blood. Organic endocardial blood murmurs are produced by blood currents pursuing either a normal or abnormal direction. These subtile changes in constituents and direction we see causing such marked impressions at one vital center; how important when the conditions mentioned are given their due weight and influence.

Consider the possibilities at other seats of vital energy. The murmurs mentioned and their etiology give a faint conception of one of the multitudinous influences at work on a normal organism. Take a vaso-motor reflex, and sanguineous fluid deflection in quantity and quality, an impinged blood vessel or nerve, an excessively impressionable sensorium, improper cell action from imperfect cerebration, and tabulate your products.

To this add expected maneuvers of aplastic, cacaplastic or euplastic material, influenced by muscular, nervous and vital activity, continually in the state of excess, defect or perversion, retarded by the force of gravity, pressure or compression, and much is learned of the importance of pathogenesis and morbid anatomy in a general sense, allowing us to look intelligently into the concluding element of our subject—diathesis.

Dunglison says diathesis is "predisposition to certain diseases rather than to others; disposition, constitution, affection of the body." The principal diatheses mentioned are the cancerous, scrofulous, scorbutic, rheumatic, gouty and calculus.

We now desire to use our knowledge of pathogenesis and morbid anatomy upon the aggregation of organs before us. A physical inventory is made by the flash light of intelligence and medical acuity, and what can not be demonstrated is reached by exclusion.

I shall not attempt to enter into the labeling of diathesis, and proportioning the per cent. of material—aplastic, cacaplastic, or euplastic, nor argue excess, defect, or perversion, but desire to suggest that each individual is an incased diathesis or union of diatheses.

A knowledge of the origin and development of pathologic processes, and of the changes in the tissues and fluids of the body, appreciable to the naked eye, or with the aid of the microscope, in connection with the land marks of each diathesis, its peculiar language and manifestations, enables the careful observer to differentiate.

An error in diathesis means negation in pathogenesis and morbid anatomy, an encephalic chaos, more chagrining because of knowledge possessed but misapplied. To reason connectedly, conclude correctly, treat scientifically, cure naturally, we must encompass the relationship among pathogenesis, morbid anatomy and diathesis.

Jejunostomy.[2]

The case reported was operated on, because of the impossibility of maintaining nourishment either by stomach or rectum, in a woman who had taken 50 c.c. of a 50 per cent. solution of zinc chlorid during an attack of melancholy.

[2]Karewski, in Proceedings of Berlin Medical Society for 1896.

In spite of unfavorable circumstances, improvement followed nourishment through the fistula, but double pneumonia set in, vomiting continued and, during a paroxysm of coughing, the stomach ruptured, and death followed shortly from collapse and beginning septic peritonitis. There was also an acute toxic nephritis.

Karewski had collected twelve similar cases from literature. Of these, nine were of gastric cancer, so far advanced as to preclude the possibility of gastro-enterostomy, and three of toxic erosion. Of the nine cases of cancer, four died by the tenth day, the rest lived so long as was compatible with the underlying condition. Of the three cases of corrosive poisoning, two, including the present case, died soon after operation, the other one survived and was able to resume nourishment by the mouth two weeks after operation.

Medical Practice in Zululand.[3]

A gentleman who has recently accepted a Government medical appointment in Zululand, has written to us as follows:—"Medical practice in Zululand, like all Gaul, is divided into three parts—that by the district surgeons (of whom there are five), that by the Kaffir doctors, and, of course, that by the ubiquitous quack. The two former have to obtain from the Government a license to practise, for which each alike pays a guinea a year. The district surgeons get a salary of £200 per annum and extras, with permission to practise if they take out the license.

The practice and extras amount to about £30 a year, as told to me by one of them, who, however, supplements his income by acting as a missionary, and some have £50 a year, for conducting a dispensary, at which they must attend all natives at a uniform fee of one shilling. The shilling goes to the Government, which supplies the necessary medicines; the district surgeon, however, is expected to provide surgical instruments.

The dispensary system does away with all chance of native practice, which before its institution used to yield a fair income, as the natives cannot see why they should pay more than 1*s.* for private attendance when they can have attendance and medicine at the surgery for that sum.

The term 'extras' means a traveling allowance per mile, outside a six-mile radius, of 1*s.* out and 6*d.* return, to obtain which the practitioner has to keep one or two horses and a groom and must frequently sleep at Kaffir stores, where the charges are from 5*s.* to 7*s.* 6*d.* a night for his horse, 2*s.* 6*d.* for his bed, and 2*s.* 6*d.* for each meal. This item is therefore a source of loss rather than of profit.

No allowance is made for evidence in courts of justice, for inquests, or for post-mortem examinations.

The white population, including the military, numbered until recently about 700. I do not think that at present it exceeds 500, and the military surgeon at Eshowe takes what private practice he can obtain.

No houses are provided by Government, and the district surgeon must build a hut, sleep in a tent, or provide a dwelling-place as best he can. This in the case of a bachelor and a young man (and no other should be appointed to these posts) is not of such consequence; but for an elderly man, a married man, or, above all, one with children, it becomes a serious matter, as a whole family must crowd together in one room which answers for all purposes in a manner which would not be tolerated in the East-end of London, and besides there are no educational advantages whatsoever.

The collapse of the Nondweni goldfields (at which place there was until recently a resident surgeon) has sent most of the people there away. This was the only place in Zululand which supported a medical man of its own. Since his departure the N'qutu district surgeon easily combines the practice there with his official duties, although the two places are thirteen miles apart.

The cost of living in Zululand—principally on account of the very high rate of freight by rail through Natal and by bullock waggon in Zululand, as well as through the mealie famine, the locusts, and the rinderpest in other parts of South Africa—is extremely high, in addition to which the Government salaries are very disproportionate to necessary expenditure and much below what is usually paid by others. Tradesmen even,

[3] *Lancet*

carpenters, and blacksmiths can get from £28 to £30 a month—horseshoes cost 10*s*. a set. Even young fellows under twenty are drawing salaries of from £15 to £25 a month at the mines, without any trade or profession whatsoever.

The quacks seem to go on the even tenor of their way here as elsewhere and do a roaring trade, not only at extracting teeth at 1*s*. each, but at bone-setting, surgery, and the practice of medicine generally, uninterfered with by the Government. Taking one consideration with another the life of a district surgeon in Zululand is, like the policeman's, 'not a happy one.'"

TRANSLATIONS.

NOTES FROM THE TRANSACTIONS OF THE BERLIN MEDICAL SOCIETY FOR 1896.*

Motility of the Gonococcus.

Moore, of Chile, had demonstrated the motility of the gonococcus, and had considered it a vital contractility, distinct from osmotic movements, etc. Kiefer took the ground that Moore had mistaken the osmotic movements of eosinophile granules, under the action of imbibition of soda solution and demonstrated these movements. Meissner, speaking for Moore on account of the latter's inability to express himself in German, stated that they were familiar with the phenomena described and shown by Kiefer and had demonstrated entirely different ones.

Three Hundred Intestinal Diverticula.

Hansemann described a case of 300 or 400 diverticula occurring in a man of eighty-five. The diverticula varied from the size of hemp-seed to that of a pigeon's egg, and were due to relaxation at the point where the veins penetrate the muscular coat, some millimeters from the mesenteric attachment. The arteries follow a different course, branching under the serosa. The weak points could be demonstrated in the normal intestine by distension with water.

Cancer in a Girl of Twenty.

Benda described a case in which a lymph node of the neck had been removed on account of enlargement, which, it was feared, was sarcomatous. On examination, the tumor showed what seemed to be epithelial cells. Benda, on account of the absence of indications of a primary carcinoma whence metastasis might have occurred, was inclined to regard the tumor as a true endothelioma. Later, a cancer of the vault of the pharynx was found.

Barlow's Disease.

Meyer reported four cases, all occurring in children of about six months. The first case developed suddenly, during good health, showing tenderness of the left leg, edema below the internal malleolus, suggilation over the left hip. After a few days, marked left-sided exophthalmus developed and liquid blood and clots were removed by incision. The swelling of the leg increased and the epiphysis was found to be destroyed. Death occurred from progressive anemia. Rhachitis, anemia, internal sero-fibrinous pacchymeningitis, periostitis and hemorrhagic parositis, separation of the epiphysis, fatty metamorphosis of the heart, multiple hemorrhages of the myocardium and lungs, hydrocephalus, were demonstrated post-mortem.

The second case began with mild digestive symptoms, the eye-lids, hands, fore-arms and feet were swollen and tender. The case recovered under diet and hygienic measures. The other two cases died of progressive anemia. He considered the development of sub-per-

*Translated by A. L. Benedict, M.D., for THE MEDICAL AND SURGICAL REPORTER.

iosteal hemorrhages in a child, showing hemophilic and rhachitic tendencies as diagnostic, though not pathognomonic. The gums would be involved in children after teething, but were not in these cases on account of the age.

In the discussion, Hamburg, commenting on Meyer's statement that the babies were all of families in good circumstances and had been reared on Rieth's albumose-milk, said that this might have been the cause of the disease. He made the interesting statement that Barlow's disease had been clearly described in the eighteenth century; that Möller had noticed it in 1857 and that Heubner had collected about fifty cases in 1872. Since then, about 200 cases had been reported. He would admit that only a few of the 500 or 600 children fed on Rieth's albumose-milk had had the disease. Discussing the value and mode of preparation of this food, he said that according to the ordinary methods, a child would receive forty centigrams of potassium carbonate daily. He had, therefore, changed to the use of sodium carbonate—thereby slightly diminishing the albumose formed—of which carbonate the child only received ten centigrams daily and that, in the nine months since this modification has been in effect, 300 children had been nourished without any cases of Barlow's disease.

Cassel reported four cases, including one in which the flat bones, as of the skull, were involved, as well as hollow bones, and in which hematuria occurred. He emphasized the idea that any artificial food, too long continued, might cause Barlow's disease and that milk need not be sterilized more than fifteen minutes. In treatment, he used a change of diet, mainly employing fresh cow's milk, boiled for a few minutes, and fruit juices. He said that the disease seemed to be more common in America, since eleven reporters at the New York Academy of Medicine, in 1894, had enumerated seventy-two cases at one meeting. He explained the prevalence in America by the predilection for artificial foods.

As to diagnosis, he thought the principal thing was to bear in mind the possibility of the disease, though congenital syphilis might be confused with Barlow's disease. He cited the case of an eminent surgeon who had put on a plaster of Paris splint, mistaking the nature of the bone symptoms.

Scientific Opinions of the Nose.

The noble human nose is enthroned like a queen on the face and rules the realms of physiognomy as does no other feature. Indeed, the beauty of the other features is regulated by the form of the nose, for even the most regular features lose their attraction when offset by an unlovely or mis-shaped nose.

The characteristics of the various shapes of nose according to physiognomy are as follows: The small flat nose, found mostly among women and called the *soubrette* nose, when occurring with an otherwise agreeable and fortunate build of features indicates a certain gracious and cheerful naivete, combined with an inconsiderate curiosity. Such a nose seldom is possessed by men, at least in Europe, and when it is it denotes nothing in their favor but shows an individuality characterized by weakness and deficient sagacity. A nose thick and flat is an unfavorable feature with men as well as with women, usually signifying that the character is predominated by material and sensual instincts; while a turned-up nose with wide nostrils bespeaks a vain, puffed-up disposition. Especially wide nostrils are a sign of strength, courage, and pride; small nostrils, of weakness and timidity. Noses large in every respect are found mostly among men and are masculine attributes, proclaiming the energetic character of the stronger sex. Among women a large, strongly modeled nose is rare, and when it does occur it indicates a virago of a hard and unlovely disposition.

The nose is not inaccessible to "higher culture." The noted nose physician, Dr. Maximilian Bresgen, of Frankfort-on-the-Maine, says on this theme: "It is beyond dispute that during half of an individual human life the nose is capable of receiving a more noble form. The training of the individual, the culture of his intellect and character have a very considerable influence not only on the expression of the face in general, but also on the bodily nature of the nose."
—Ernst Schutz, in *The Chautauquan.*

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PHILADELPHIA, SATURDAY, MARCH 20, 1897.

EDITORIAL.

PRACTICING MEDICINE FOR FUN.

The above may seem a strange and an undignified title for an editorial article in a journal that has always taken a serious view of its duties to subscribers and of the profession which it represents, but it is the proper characterization of the willingness of medical men to lower their calling to the status of an occupation of leisure time. There is a natural dignity attaching to the performance of any necessary function, however humble, even though the avowed object of the worker be simply the earning of bread.

One of the most potent arguments against some of the newer occupations of women has been that the organization, the expense, and the time required have had no actual need to call them forth, and that the effort has been put forth merely as a gratification of vanity, or to use up superfluous energy, or, worst of all, to fill with unproductive activity days that ought to have been taken up with less pretentious but more practical domestic duties. Sometimes such arguments have been utterly misdirected, sometimes they have expressed much more than mere prejudice, but, in either case, they are scarcely such as physicians may use, since, in our own profession, we see so much of a similar busy idleness.

The reader will have observed that we are threshing out the old straw of the dispensary and hospital evil, and he

may rightly criticise us for introducing a familiar topic without the power of adding anything new to what has already been written and said. But we feel that if our remarks are trite, so, too, is the practice condemned; if we fail to bring forth a new complaint, neither have the offenders offered an excuse which has not been overthrown; in short, so long as the old evil persists, so long must the medical press continue to cry out against it.

We have nothing to say against men of independent wealth engaging in the practice of medicine, though in general we believe that men and women of means should find some purely altruistic outlet for their energies, and should avoid fields of labor already overcrowded by those who must earn their own living and who are forced into the particular occupation in question either by external circumstances or by decided preferences.

There is no call for physicians who will donate their services to the public; not even for those who will conscientiously limit their attendance to cases demanding charity, for there are no more charity cases than are needed for the education of students and for proper study on the part of graduates. Thus the man who "gives his services to the poor" takes from his colleagues whose interest in medicine is a serious and a practical one almost as tangibly as though he accepted paying patients. In this connection it ought to be stated that we have no personal acquaintance with this type of philanthropic physician, and that we believe that he is more common in fiction than in real life. All the rich men who have engaged in the practice of medicine, and with whom we have any personal acquaintance, have no hesitation whatever in accepting fees.

It would be a narrow policy and a most selfish form of unselfishness to limit this discussion to the welfare of the profession. If the multiplication of colleges, the increase of physicians who are willing to donate their services, and the gradual education of the public to accept such gratuitous ministrations brings it about that medicine must be a profession of the rich, those who depend upon it for their present scanty livelihood must seek other employment, less congenial, perhaps, but scarcely less profitable, for few medical men in legitimate practice can honestly say that their work has been a financial success, except in comparison with less fortunate neighbors; and few of us would admit that we lacked the ability to make at least an equal income in other industries.

But, in the first place, the history of all civilizations shows that unpaid, amateur philanthropic labor cannot be depended upon to supply any staple want of the people. It may endow an occasional library, set up a few fountains, give a welcome surprise at times to a limited number of lucky persons, but it cannot take the place of a paid profession compelled in all places and at all times to steady work by motives of personal necessity. The medical and nursing professions have, in turn, supplanted the ministrations of religious bodies as well trained and as well disciplined as spiritual fervor and organization could accomplish, and infinitely more reliable and more numerous than the most sanguine could expect from an unorganized tender of services by the rich. The development of municipal, county, and State charities to supplant voluntary relief, of paid fire and police departments to take the place of the efforts of loyal citizens, the tendency to put all kinds of relief on a business basis, shows that volunteer work is always more or less dilettante.

The very fact that medical aid constitutes a practical and general necessity in society, is sufficient argument against its acceptance as a charity, except by those to whom charity may rightly be extended. One primary concept underlies the various sentiments that we speak of as honesty, independence, charity, generosity and obligation. As in the material world, no action can take place without a corresponding reaction, so in the moral and economic world, the attempt to get something for nothing or to hold that which has not been fairly earned, is abhorrent to all right-thinking individuals.

The life of a medical man and the exactions at the entrance to his profession, are such that we need have little fear that men of means will be drawn into it, except as the conditions become such as to drive out the wage-earners and to revolutionize the social and economic status of the medical profession. At present, we are at the point when concerted action may avert the tendency to a "vicious circle." We are so numerous that the beginner finds it a tedious process to build up a practice while even the established physician can draw an unfavorable comparison between his present and his past experience or can learn from still older colleagues of opportunities which the present lacks. The relative lack of employment is a temptation to engagement in dispensary and hospital work which did not appeal to the physician of a generation or two ago, except from philanthropic reasons. But the disgraceful and undignified machinations of some of our colleagues to get charity patients can no longer be concealed under the cover of philanthropy. We have, of course, not a word to utter against legitimate charity, but we protest that, at the present time, almost every city exemplifies the following evils and strives to blind the eyes of the public as well as of the profession to their existence:

1. Free medical attendance is given without proper investigation into the means of patients, if it is not actually urged on those well able to pay the charges of the average practitioner;

2. Surgical aid, especially in case of accident, is even more freely rendered; emergency practice in the experience of the surgeon unconnected with a hospital is almost nil; a person injured on the street is scarcely given an opportunity to express his preference as to surgical aid and the spectacle of two rival ambulance surgeons fighting for a case is by no means unknown;

3. Hospitals organized and supported as charitable institutions, sometimes contract to attend, for a nominal sum, the patients for whom wealthy manufacturing or railroad companies are responsible;

4. The greatest amount and the meanest kind of medical politics, has to do with securing hospital and dispensary practice;

5. Charity practice which ought either to be conducted for the benefit of the patient or to enable physicians lacking in experience to obtain it, is used almost solely for the aggrandizement of men who need neither the indirect pecuniary returns nor the experience;

6. The present conduct of charity practice is almost entirely on the line of "Quantitas non qualitas," the nominal attendants neglecting the routine cases and paying attention only to those which will make brilliant case-reports.

7. In hospitals supported by public charity if not by public assessment, the right of the patient to choose his attendant or of the physician to continue his observations of a case, is ignored for the purely selfish interests of the staff;

8. In some hospitals, the staff even monopolize the rooms devoted to patients

paying for accommodations and entitled by every moral and business principle to entire freedom in the selection of a physician;

9. The hypocrisy which underlies almost every manifestation of organized medical charity not only takes from the income of the poor and adds to the income of the well-to-do physician, not only diminishes the total support of the profession but, to the degree to which it is appreciated by the laity, reflects upon the integrity of the profession as a whole.

ABSTRACTS.

STAINS AND THEIR REMOVAL.*

Stains should be treated as speedily as possible after their first appearance. When once dry they are more difficult to remove, requiring both time and perseverance. Paint should be instantly wiped off; grease on wood, stone or carpet should be congealed before it has time to penetrate, by throwing cold water over it. Tea, coffee, ink, wine and fruit stains will disappear in a quarter of the time if they can be attended to while wet. Spots on colored material must not be rubbed, but dabbed over and over again until they disappear. Rubbing roughens the surface, and often leaves a whitened circle almost as unsightly as the original stain. The dabbing is best done by covering a finger with an old handkerchief, frequently changed, and great care should be taken to confine the operation to the area of the stain itself, and not to extend the damage by damping and dabbing the surrounding material. In the treatment of stains, to know what you mean to do, and to do it quickly and neatly, is more than half the battle.

WHITE WASH GOODS.

For acids, tie up a bit of washing soda in the stained part, make a lather of soap and cold soft water, immerse the linen, and boil until the spot disappears.

For anilines, wet with acetic acid, apply diluted chloride of lime, and wash out carefully.

Apple and pear stains may be removed by soaking in paraffin for a few hours before washing.

Blood, if fresh, is removed by soaking for twelve hours in cold water, then washing in tepid water. If the mark still remains, cover it with a paste made of cold water and starch, and expose to the sun for a day or two. Old stains require iodide of potassium diluted with four times its weight of water.

For coffee or chocolate, pour soft boiling water through the stains, and while wet, hold in the fumes of burning sulphur.

Fruit stains can be treated in the same way, if fresh, but if old rub them on both sides with yellow soap, cover thickly with cold-water starch, rub in well, and expose to sun and air for three or four days. Then rub off the mixture and repeat the process if necessary.

Grass stains are removed by alcohol.

Ink requires milk for its removal; the spot should be soaked and gently rubbed. A fresh stain will disappear quickly, but an old one may need soaking in milk for twelve hours.

For iron mold, spread the stained part on a pewter plate set over a basin of boiling water, and rub the spots with bruised sorrel leaves, then wash the article in soft warm suds. Or, cover the spots with a paste made of lemon juice, salt, powdered starch and soft soap, and expose to the sunlight.

Mildew can be removed by the above paste, or by simply wetting the spots, covering them with powdered chalk, and bleaching on the grass.

Paints must disappear before oil of turpentine and perseverance.

Scorched linen can be restored if the

*Dyer and Calico Printer.

threads are not injured. Peel, slice and extract the juice from two onions, add half a pint of vinegar, half an ounce of curd soap, two ounces of fuller's earth; boil these well, and when cool spread over the scorch, let it dry on, and then wash out the garment.

Tar can be taken off with petroleum.

Tea stains yield to the action of boiling water poured through them from a height, or to glycerin.

Wine stains, if old, treat like old fruit stains; if fresh, table salt spread over the spots while wet will neutralize the damage.

Nature of stains unknown.—Stains of which the cause is unknown will frequently disappear if held in a pan of milk boiling on the fire, or by dipping them in sour buttermilk and drying in the sun. The articles should then be washed in cold water, dried, and the process repeated several times in the day. The following bleaching liquid will effectually remove any trace that may still remain after the garments have been through the laundry. It may be called an instantaneous ink and stain extractor, but requires to be used with care lest the fabric suffer. Put a quarter of a pound of chloride of lime and a quart of soft water in a wide-mouthed bottle and shake it well. Cork tightly for twenty-four hours, then strain through cotton and add one teaspoonful of acetic acid to every ounce of the mixture. Damp the stain, apply the extractor, and wash well in clear, soft water.

COLORED GOODS.

For the removal of stains and spots from colored materials and carpets ammonia takes the first place. Almost any mark, new or old, will yield to its persevering use, and if dabbed on (not rubbed) it will itself leave no trace of its use. It can be applied to woolens, cottons and silks. It will remove ink stains from marble, paper, and wood. Grease flies before its application, and when diluted with water, spots caused by orange or lemon juice or vinegar are removed by it from the most delicate materials. For very nice fabrics some people like to use the old-fashioned javelle water, to be obtained from the chemist; but ammonia, delicately applied, does quite as well. From carpets, curtains and suits of clothing it will remove almost every stain, including that caused by whitewash.

Ink spots are always the most difficult to efface. Take up as much of the ink as possible with a spoon and blotting paper, and then use milk or clear water until it disappears, being careful not to extend the area of damage done by rubbing the ink into the adjacent material.

Benzin will remove paint from delicate fabrics; if it fails, turpentine must be used, and the mark which it leaves be effaced with alcohol. If in the process of removing stains the color departs from the material, it can generally be restored by dabbing with chloroform.

Her father is a physician and an admirer of culture. But he grows weary now and then of hearing Mabel play scales and five-finger exercises. After a half-hour of work from her exercise book she turned and said:

"Father, I have taken up the study of theory."

"Have you?"

"Yes. This," she went on, striking a chord, "is a tonic."

"Mabel," he answered, in a tone of patience sorely tried, "I'm ever so much obliged, but I don't think that is what I need. But if you have a sedative that you could try on me I'd appreciate it more than tongue can tell."—*Washington Star.*

A scientist has discovered that persons who get up early get mad sooner than those who do not. It does not need a scientist to tell us that. A man who is awakened at six o'clock and ordered to get up and build the fire has a right to get mad. His wife has certainly not anything to get mad about.—*Puck.*

He: When I was a child, don't you know, I fell off my rockin' horse and was knocked senseless. She: Oh, what a pity you weren't treated for it at the time. It's too late now, I suppose.—*Fun.*

A REFLECTION.—She—I think Mr. Rymer felt hurt at a remark you made the other night. He—What did I say? She—You said there was only one Shakespeare.—*Puck.*

A BOY'S PRIZE STORY ON BONES.

The "Junior League" is a paper "published semi-occasionally, or whenever it is convenient, by children, for children, in aid of children." In the May issue are printed a number of articles that took prizes in a recent story competition, and from among these we copy the following essay on "Bones," which took the first prize in class V:

"Bones is the framework of the body. If I had no bones in me I should not have so much shape as I have now. If I had no bones in me I should not have so much motion, and teacher would be pleased, but I like to have motion. Bones give me motion, because they are sometimes hard for motion to cling to. If I had no bones my brains, lungs, heart and larger blood-vessels would be lying around in me and might get hurt, but now my bones get hurt, but not unless it is a hard hit.

"If my bones were burned I would be brittle, because it would take the animal out of me. If I was soaked in acid I would be limber. Teacher showed me a bone that had been soaked; I could bend it easily. I should rather be soaked than burned. Some of my bones don't grow close to my others, snug like the branches to the trunk of a tree, and I am glad they don't, for if they did I could not play leap-frog and other good games that I know. The reason why they don't grow that way is because they have joints. Joints is good things to have in bones. They are two kinds. The ball and socket joint, like my shoulder, is the best. Teacher showed it to me, only it was the thigh of a cow. One end was round and smooth and whitish. That end is the ball end. The other end was hollowed in deep. That is the socket end and it oils itself. It is the only machine that oils itself. It never creaks like the school door. There is another joint that doesn't seem much like a joint. That is the skull. It don't have no motion. All my bones put together make a skeleton. If I leave out any or put any in the wrong place it ain't no skeleton. Some animals have their skeletons on the outside. I am glad I ain't them animals, for my skeleton like it is on the chart wouldn't look well on my outside."—*St. Louis Clinique.*

LONDON'S WATER SUPPLY.

The water-supply system of London is a capital instance of the superhuman patience with which Englishmen endure the short-comings of officialdom. The London County Council, unlike the other municipalities of the kingdom, has nothing to do with water. Parliament has created a monopoly and the metropolitan rate-payer is helpless. His water is supplied to him by eight private companies, whose united efforts provide thirty-one gallons a day per head, whereas a sufficient supply is estimated at thirty-five gallons. Of these companies the East London is the worst. The East London Water Company is constantly being taken by surprise. In the hard winter of 1894-95 it complained of the cold. In the fine summer of 1895 it complained of the heat, and this year it practically gave up all attempt to supply its customers with what they bargained for. A water famine in the East End is an annual event and, in time, perhaps, the tardy London rate-payers may wake up to the danger of their apathy and indifference. London pays for its water $11,000,000 a year, though the working expenses of the companies amount only to $4,000,000. About $7,000,000 is paid away in dividends on a capital of something over $75,000,000 and for this investment the companies are modestly asking to be bought out at $175,000,000. One has only to turn to the provinces to see how far London lags behind the rest of Great Britain. Glasgow bought out its water companies forty years ago,

and can now boast an available daily supply of 50,000,000 gallons for a population of 850,000 at a total capital expenditure of $10,000,000—a daily supply, that is, of nearly sixty gallons per head. Manchester, Birmingham, Liverpool, Leeds, all tell the same tale.

Almost every town of any size in the kingdom owns its own water-works and provides about forty gallons a day per head, with ample reserves in the case of drought. Only London accepts an uncertain thirty gallons a day from monopolist companies, one of the largest of which frequently fails to maintain its supply. The other towns have sought pure water at spots far removed from habitation; London continues to draw its supply from the polluted valleys of the Thames and the Lea. The other towns are looking ahead and making ample provision for increase of population and consumption; London, being so much occupied with the helplessness of the present, has not turned a thought towards the future. All her inhabitants can do is to pay their rates and be thankful for such water as they can get. —*Harper's Weekly.*

THE PURIFICATION OF WATER.

Of the various means of purifying water, heat is the most simple, reliable, and absolute. Less than 1 per cent. of the bacteria in water will withstand boiling for a few minutes, while the greater proportion of them is destroyed at a temperature far below this in less than a minute. This pertains to the chief pathogenic organisms which we have to consider—typhoid fever, cholera, and the colon bacillus; hence boiling or even heating water becomes an important safeguard in time of epidemics.

With reference to the use of bottled waters generally—mineral waters so called—it is deemed necessary to add here a word of advice. Most of these waters, while naturally pure as they emerge from the earth, soon become contaminated, and then in their quiescent state in bottles for perhaps months before being used, they are afforded ample opportunity for a growth of bacteria such as would defeat all effort at numerical calculation.

Few of the individuals who have anything to do with the filling of these bottles have any knowledge of *asepsis*, and accordingly the bottles are not properly cleansed and sterilized preparatory to the filling. With the rapidity of reproduction of which bacteria are capable the presence of only a few in a bottle at the beginning would give rise to vast colonies in the course of a few days. Persons who have used these "mineral waters" probably have often noticed the sediment in the bottom of the bottle without thinking what it meant. Often they may have been deluded by the thought that it was the mineral ingredients that had precipitated. This sediment is the product of and abounds in microörganisms.

Even after standing for years the water prepared by the double distillation and reaeration process described above will be found unchanged, because of the technique employed and the fact of the absolute absence of any bacteria in the water when it is put into the bottles, which are sterilized. From this pure "crystal water" any of the various "mineral waters" may be made by adding the salts in proper proportion.—FRANK J. THORNBURY, M.D., in *The Chautauquan.*

In England no physician may legally give a certificate of the cause of death unless he has prescribed for the person at least forty-eight hours before death. Without such certificate no undertaker is permitted to bury the body.

"That man Von Miner is the most careful individual of his health that I ever saw," said Van Wither.

"What does he do?" asked a friend.

"He's so afraid of appendicitis," replied Van Wither, "that he takes all his grapes in liquid form."—*Judge.*

SOCIETY REPORTS.

ORTHOPEDIC SECTION OF THE NEW YORK ACADEMY OF MEDICINE.

Regular meeting, February 19, 1897.

DR. A. B. JUDSON, on taking the Chair, said: In these times of activity in scientific discovery it is necessary for us to be alert. Let us practise condensation in our papers, so that important points will stand out and compel discussion. I propose a rule of fifteen minutes for a brief paper, thirty minutes for a long paper, and five minutes for remarks in discussion. Let us also be moderate in discussion. A. is obviously unreasonable in his theories; B. undoubtedly adheres too closely to tradition; C. and D. evidently are after the almighty honorarium; E. is visibly prone to follow strange, foreign gods; and F., alas! has an unfortunate way with his patients which leads to certainly dubious results. But each one of them knows more about orthopedic surgery than the wisest man twenty-five years ago, and they doubtless have a generous regard for each other and the remaining letters of the alphabet.

DR. SAMUEL KETCH read a paper entitled:

Remarks on the Orthopedic Treatment of Spastic Paralysis in Children.

Patients thus affected are those whose mentality is (1) *nil*, (2) diminished, and (3) normal or nearly so. The treatment should include special education of the muscles. I have never seen any advantage from the use of electricity in any form. If used at all, constant current may have a good sedative effect. Massage has but little value in these cases. Mechanical treatment is directed to improvement in locomotion or reduction of deformity, and produces its best effects in patients whose intellects are least impaired and in deformities and disabilities of the lower extremity, especially when the judicious use of the superincumbent weight corrects the elevated and inverted feet. Tenotomy is certainly a useful resort. Opposition to it is based on theoretical grounds and the results in patients who are not proper subjects for operation or whose after-treatment was neglected. With growth there is a lessening of the spastic element, and the degree in which this has been displaced by a fixed deformity should be considered in undertaking mechanical or operative treatment. Patients in whom the deformity is the result of marked spasm resist treatment or are liable to relapse. Apparent mental improvement occurs with better locomotion and general improvement.

DISCUSSION.

DR. FREDERICK PETERSON (from the Neurologic Section).—A great deal may be done by pedagogy or education of the muscles by efforts of the will, by active, not passive, movements, as, for example, using the typewriter or playing the piano in the case of a paralyzed hand.

DR. WILLIAM M. LESZYNSKY (from the Neurologic Section).—I have seen no benefit from electricity. More can be obtained from efforts of the will. Persistent efforts to walk are sometimes sufficient to restore the function of the muscles. In cerebral palsy, of course, little can be done.

DR. R. H. SAYRE.—I have found faradism a good way of giving gymnastic exercises to muscles not under control of the patient as one of the means of pedagogy of the muscles. After various tenotomies to place the parts in normal relation to each other, we can do a great deal in the way of educating these muscles.

DR. V. P. GIBNEY.—In the prevention of these deformities further advance is to be sought in researches into the underlying neurologic condition.

DR. H. L. TAYLOR.—Benefit is to be derived not only in children but also in adults from mechanical treatment and tenotomy. The contraction is not easy to control by braces; it will return when the brace is removed. Tenotomy not only makes it possible to retain the foot in position, but has a decided effect upon the spasm. The tendon is cut for the specific purpose of relieving the spasm. A very marked mental improvement follows this treatment.

DR. H. W. BERG.—As many of these cases accompany idiocy, pedagogy of the muscles will apply most aptly. The sense of sight should be developed by bright colors, hearing by the use of bells, and increased motor ability developed by repeating certain motions a great number of times. Years of patient toil may thus be well spent. I am rather in favor of galvanism. In the results of meningeal hemorrhage, education of the muscles is "love's labor lost," and, while tenotomy here has a place, the treatment is radically different from that of patients in whom idiocy accompanies spastic paralysis.

DR. N. M. SHAFFER.—So long as approximately normal movements can be obtained by passive motion, tenotomy is not needed. In time, however, the spastic contraction becomes a contracture with permanent deformity, together with improvement in the mental condition. It is only where these changes are observed that tenotomy is indicated and the operation is then followed by much better results than when done at an earlier stage.

Radical improvement occurs with growth as the result of the general changes which occur every seven years. For these reasons the time at which an operation should be performed is an important question, and a delay of two or three years sometimes secures a distinct advantage, passive exercise being practised in the meantime, one-half an hour or an hour each day.

DR. PETERSON.—In these cases the paralysis is not to be considered as the result of the idiocy. Degrees of idiocy, palsy, and epilepsy are all symptoms of cerebral injury received before or during parturition or within two or three years after birth. Idiocy is a symptom often associated with spastic paralysis. In idiots we find sclerosis, strophy, and cysts, but not hemorrhage. In spastic paralysis, while we find meningeal hemorrhage, there are few cases in which deficient development of the brain is found post-mortem. In these cases we have no irritability of the spinal cord, but rather exaggerated reflexes from cutting off of inhibition. Mental improvement often follows education of the muscles, but where it attends any muscular change from contraction to contracture, it is probably a coincidence. As these muscles do not react so well with the galvanic current, the faradic would give them better exercise. The former often irritates the skin, but children rather like the latter.

DR. KETCH.—The benefits of special education of the muscles are best obtained in the schools conducted for the instruction of the feeble-minded.

Specimen showing "Secondary Pott's Disease, with Compression of the Cauda Equina, Following Empyemia."

DR. GEORGE R. ELLIOTT presented a specimen from a man, twenty-eight years of age, who had tubercular involvement of both lungs and purulent exudation into the right pleural cavity. Later there were slight lumbar kyphosis, slight motor paralysis of the lower extremities, and pain and knee-jerks varying with the position of the patient. While lying on the right side, pains ceased, and knee-jerks returned and disappeared when he was lying on the left side or back. At the autopsy the right pleural cavity was found filled with pus, and an extra-dural sinus extended from the tenth dorsal vertebra, where it communicated with the right pleural cavity, to the second lumbar vertebra. The tenth vertebra was carious, and the fourth and fifth lumbar were softened, with a small abscess cavity separated from the cauda equina by an area of pachymeningitis externa caseosa. The central surface of the dura is intact. The extra-dural sinus rested upon this caseous mass and did not mix its contents with those of the extra-pachymeningitic abscess cavity. No microscopic degeneration of cord. Points of interest: (1) Entrance of pus from pleural cavity into vertebral canal, the usual order reversed; (2) dural secondary involvement of vertebral column; (3) compression symptoms varying as the patient changed his position, with varying quantity of pus in the epidural canal which communicated with the pleural cavity containing pus. The patient had lung trouble before any signs or symptoms of vertebral caries appeared. Whether evacuation of the pus had been a part of the treatment Dr. Elliott could not say, as he did not see the patient during life.

DR. SHAFFER related a history in an adult man, who had caries extending from the seventh to the eleventh dorsal vertebra, and an abscess over the ribs. Every three or four weeks he had a cough, with expectoration of fragments of the vertebra, the general health remaining good.

Indican in small quantities is a normal constituent of the urine in health, but under certain circumstances the amount is so large as to merit the designation of indicanuria. This condition is usually dependent on decomposition of the intestinal contents consequent on constipation, but it has recently been discovered in the urine in connection with the formation of pus, in such quantities as to authorize the belief that its presence may afford an important indication of latent suppuration.

The first thing, of course, is to eliminate the intestinal tract as the source of the indicanuria, and this is done by the administration of naphthol, bismuth or other disinfectant. Should chemical analysis still reveal the persistence of the indicanuria, there is reason to suspect suppuration.

The analysis is simple enough to admit of its application by every one. Equal quantities of urine and strong hydrochloric acid are shaken together in a test tube, and a little chloroform is added. In the presence of indican this becomes blue from the indigo liberated by the decomposition of the indican, and falls to the bottom of the tube.

A fair idea can thus be readily obtained of the amount of indican present, but for diagnostic purposes it is necessary to resort to a quantitative analysis. This does not involve much additional trouble, advantage being taken of the bleaching powers of hyperchlorite of calcium, a standardized solution of this salt being dropped into the above mixture until complete decoloration results. Three or four drops of a 5 per cent. solution may suffice for this purpose, but in some cases as much as 50, or even 80, drops may be required.

The regular meeting of the Medical Section of the Buffalo Academy of Medicine was held March 9, 1897. Program: "Cystitis," Dr. W. D. Greene; discussion opened by Drs. Grosvenor and Hartwig; Report of a case of "Tumor of Frontal Lobe of Brain," with specimen, Dr. W. C. Krauss.

PERISCOPE.

FORMULÆ.

FOR MALARIA:

℞

Acetanilid	℈ij
Tr. opii deod.	gtt. x
Tr. digitalis	gtt. xv
Spt. æth. nit.	℥j

M. Sig.: Five to 45 drops, as to age, before chill or during fever.

Or

FOR VOMITING OF MALARIA:

℞

Bismuth subn.	℥ij
Ac. borac	℈j
Plumbi acet	gr. iij
Aquæ (warm)	℥ij to ℥iv

M. Sig.: Give teaspoonful, warm, every hour or two until vomiting ceases.

FOR USE IN MALARIA:

℞

Ol. terebinth	℥j
Syrup	℥ij

M. Pour in three or four ounces of water, stirring, let cool, strain, and give in teaspoonful doses.—BRODNAX in *Charlotte Med. Jour.*

FOR WHOOPING COUGH:

℞

Ol. amber	mx
Pr. acaciæ	℥j
Syr. aurant. flor	℥ij
Ol. anisi	miij
Aquæ	q. s. ad. ℥j

M. Sig.: Teaspoonful every four hours.—MURRELL, *Pediatrics.*

FOR FRECKLES:

℞

Potass. carbonat	℥iij
Sodii chlor	℥ij
Aq. aurant. flor	℥ij
Aq. rosæ	ad. ℥viij

M. Sig.: Use night and morning.—BARTHOLOW.

TO PREVENT PITTING FROM SMALL-POX:

℞

Iodoform	℥j
Collodion	℥xv

M. Sig.: Paint on the pustules of the face, neck and hands frequently.—FAURE, *Progres. Med.*

FOR PRURITUS VULVÆ:

℞

Chloral. hyd	℥ij
Bismuth subn	℥ij
Aquæ rosæ	℥iv

M. Sig.: Apply locally.—*Med. Times.*

FOR TYMPANITES:

℞

Ol. terebinthinæ	℥j
Ol. amygdalæ dulc.	℥ss
Tr. Opii	℥ij
Mucil. acaciæ	℥v
Aq. laurocerasi	℥ss

S.: A teaspoonful every three to six hours.—*Medical Press and Circular.*

FOR IRRITATIVE COUGHS:

℞

Phenacetin	℈j
Ext. glycyr	℈j
Sacch albæ	℥ij

M. Ft. chts. No. XX. Sig.: One to be taken at one, two or three hours' intervals.

For same of more obstinate character:

℞

Phenacetine	℈ijss
Codeinæ sulph	grs. ij
Sacch. alb	℥ij

M. Et. div. in chts. No. XX. Sig.: As above.—DR. JAMES CROOK, *Med. Rec.*

FOR ECZEMA:

℞

Formalin	gr. j
Zinci. ox.,	
Talcs	āā ℥j ℈ij
Vaselini	℥iij ℈j

M. Sig.: Apply locally.—ROTTER, *Jahrb. f. prakt Med.*, 1895.

FOR GOITRE:

℞

Iodoform	℥j
Aetheris sulph	℥vij
Ol. olivæ	q. s. ad. ℥ij

M. Sig.: Use as a parenchymatous injection, one-fourth to one drachm.—C. GALBE, *Med. Bulletin.*

DRY ECZEMA WITH PRURITUS:

A formula emanating from Thibierge is:

℞

Menthol	gr. xxx
Resorcin	gr. xv
Sulph. precip	℥ijss
Zinci. oxidi	℥iijss
Vaseline	℥j

Ft. unguent.—*Medical Times and Hospital Gazette.*

FOR ECZEMA IN CHILDREN:

℞

Creosoti	gtt. xx
Aquæ calcis,	
Ol. olivæ	āā ℥ij

M. Sig.: Apply several times daily.—DUENGES, *Centralb. f. Kinder.*

NEWS AND MISCELLANY.

The fiftieth anniversary of the American Medical Association and the forty-eighth* annual session will be held in Philadelphia, June 1, 2, 3 and 4.

The delegates shall receive their appointment from permanently organized State medical societies, and such county and district medical societies as are recognized by representation in their respective State societies, and from the medical departments of the Army and Navy and the Marine-Hospital Service of the United States.

Each State, county and district medical society entitled to representation shall have the privilege of sending to the Association one delegate for every ten of its regular resident members, and one for every additional fraction of more than half that number; Provided, however, that the number of delegates for any particular State, Territory, county, city or town shall not exceed the ratio of one in ten of the resident physicians who may have signed the Code of Ethics of the Association.

Members by Application.—Members by application shall consist of such members of the State, county and district medical societies entitled to representation in this Association as shall make application in writing to the Treasurer, and accompany said application with a certificate of good standing, signed by the president and secretary of the society of which they are members, and the amount of the annual subscription fee, $5. They shall have their names upon the roll, and have all the rights and privileges accorded to permanent members, and shall retain their membership upon the same terms.

The following resolution was adopted at the Session of 1888:

"That in future each delegate or permanent member shall, when he registers, also record the name of the Section, if any, that he will attend, and in which he will cast his vote for Section officers."

Secretaries of medical societies, as above designated, are earnestly requested to forward, at once, lists of their delegates.

ADDRESSES.

The Presidential Address,
NICHOLAS SENN, Chicago.
Address in Surgery,
WM. W. KEEN, Philadelphia.
Address in Medicine,
AUSTIN FLINT, New York.
Address in State Medicine,
JOHN B. HAMILTON, Chicago.

COMMITTEE OF ARRANGEMENTS.

H. A. HARE, 222 S. 15th Street, Philadelphia.

AMENDMENTS TO THE CONSTITUTION AND BY-LAWS.

Offered by I. N. LOVE:

Art. IV.—Officers. Amend to read "Each officer shall hold his appointment for one year, and until another is elected to succeed him."

Offered by the EXECUTIVE COMMITTEE:

That there be made an Executive Council of five, consisting of the three officers of the Executive Committee and two officers chosen by election. Of this Council of five, one must belong to the Section on Practice of Medicine and one to the Section on Surgery and Anatomy. To this Executive Council shall be delegated all the duties of the Executive Committee during the interval between its meetings.

Offered by H. B. ELLIS:

Art. IX.—Conditions for further representation. "Any State or local medical society, or other organized institution whose rules, regulations and code of ethics agree in principle with those of this Association may be entitled to representation on the advice or agreement of the Judicial Council."

Offered by L. D. Bulkley:

To change the name of the Section on Dermatology and Syphilography to that of "Cutaneous Medicine and Surgery."

EXTRACTS FROM BY-LAWS.

"The Chairman of each Section shall prepare an address on the recent advancements in the branches belonging to his Section, including suggestions in regard to improvements in methods of work, and present the same to the Section over which he presides, on the first day of the annual meeting. The reading of such address not to occupy more than forty minutes."—*By-Laws.*

"It shall be the duty of every member of the Association who proposes to present a paper or report to any one of the Sections, to forward either the paper or a title indicative of its contents and length (not to exceed twenty minutes in reading) to the Secretary of said Section, at least one month before the annual meeting at which the paper or report is to be read."—*By-Laws.*

4.—*The Publication of Papers and Reports.*—"Every paper received by this Association and ordered to be published, and all plates or other means of illustration, shall be considered the exclusive property of the Association, and shall be published and sold for the exclusive benefit of the Association."—*By-Laws.*

OFFICERS OF SECTIONS.

Practice of Medicine.—J. H. Musser, Philadelphia, Chairman; J. T. Priestley, Des Moines, Iowa, Secretary.

Obstetrics and Diseases of Women.—Milo B. Ward, Topeka, Kan., Chairman; Geo. H. Noble, Atlanta, Ga., Secretary.

Surgery and Anatomy.—Reginald H. Sayre, New York, Chairman; Bayard Holmes, Chicago, Secretary.

State Medicine.—Elmer Lee, Chicago, Chairman, Louis Faugères Bishop, New York, Secretary.

*There were no meetings held by the Association during the years 1861 and 1862.

Ophthalmology.—G. E. de Schweinitz, Philadelphia, Chairman; H. M. Starkey, Chicago, Secretary.

Diseases of Children.—Jas. A. Larrabee, Louisville, Ky., Chairman; H. E. Tuley, Louisville, Ky., Secretary.

Dental and Oral Surgery.—R. R. Andrews, Cambridge, Mass., Chairman; Eugene S. Talbot, Chicago, Secretary.

Neurology and Medical Jurisprudence.—W. J. Herdman, Ann Arbor, Mich., Chairman; Chas. H. Hughes, St. Louis, Mo., Secretary.

Dermatology and Syphilography.—A. Ravogli, Cincinnati, Ohio, Chairman; T. C. Gilchrist, Baltimore, Md., Secretary.

Laryngology and Otology.—Wm. E. Casselberry, Chicago, Chairman; D. Braden Kyle, Philadelphia, Secretary.

Materia Medica, Pharmacy and Therapeutics.—W. B. Hill, Milwaukee, Wis., Chairman; F. Woodbury, Philadelphia, Secretary.

Physiology and Dietetics.—A. P. Clarke, Cambridge, Mass., Chairman; Ephraim Cutter, New York, Secretary.

WILLIAM B. ATKINSON,
Permanent Secretary.

The relation between auto-intoxication and insanity has lately been discussed by Dr. Allan McLane Hamilton (*Lancet*). As the result of observation in fifty cases assisted by experiments performed on rabbits he finds himself unable to recognize any specific in the urine of the insane, and in particular he has not been able to discover that any such property is markedly associated with the retention of uric acid by the blood. Where this product is apparently active he regards it rather as possibly indicative of the destructive metabolism of the nuclein of leucocytes and as related to a primary intestinal disorder.

The absorption of leucomaines which he administered to rabbits in food in the form of hypoxanthin was attended with a distinct but not a very markedly disturbing effect on the nervous system. On the other hand, a clinical investigation into the changes occurring in the contents of the intestinal canal and their effects upon mental states and upon the condition of the urine shows results which are at least suggestive. Briefly stated, these are such as go to prove constant association with some forms of mental disorder of putrefactive changes in the lower bowel.

An equally constant result of this process is the excretion by the kidneys of large amounts of indican (indoxyl-sulphuric acid) and of combined sulphates, evidently derived from toxic absorption at the seat of intestinal putrefaction. Certain forms of insanity are, in Dr. Hamilton's experience, generally related to this autotoxic condition, while others do not in this respect agree with them. The former include acute insanities with rapidly developing symptoms, post-febrile, traumatic (after operation, etc.,) and alcoholic forms of the disease, cases due to drugs, and cases of transient hallucination connected with insomnia and gastro-intestinal disorders. Into the other and non-toxic category come the stuporous and chronic insanities.

The treatment advised for the toxic series consists of purgation, especially by enemata, the use of intestinal antiseptics, of which sodium salicylate is that most approved, and blood-feeding remedies to combat the anemia consequent on the destruction of blood-corpuscles, which is present in all such cases.

As a result of the microscopical examination of a uterus removed from a patient on whom a double salpingo-oöphorectomy had been performed two years previous, Eckhardt (*Centralb. fur Gynak.*) concludes that "the mucous membrane of a uterus in which atrophy has been caused by castration undergoes the same retrograde changes that accompany senile atrophy,—namely, the cilia of the epithelium are lost, the epithelium and the interglandular stroma atrophy, and the glands become less numerous and tend to become cystic."—*Internat. Med. Magazine*, December, 1896.

Many physicians are often surprised at unexpected effects produced by even well-known and established remedies says the *New York State Medical Review.* The chemical changes produced by different medicines interacting in that great mixer, the stomach, form quite frequently new chemical compounds, having entirely different medicinal properties and even toxic properties from the original formers of that compound. It is quite customary to administer several different medicines at or nearly the same time to a patient. Opiates are given to deaden the sensibilities, and antipyretic drugs are given to weaken the heart's action so as to cool fevers, but not for the purpose of reaching the cause of the disease. Other medicines are given for that purpose. Medicines may unite chemically under the influence of a catalytic agent in the stomach to produce active toxic substances. The physician cannot afford to relegate his chemistry to the medical college. He must learn the chemical affinities of the new remedies he uses, if he would increase his success in his profession.

The number of lepers in the Molokai colony is between 1,100 and 1,200, not 11,000 and 12,000, as was recently printed in an extract from a letter written by Dr. Mouritz, of Mapulehu. The number of lepers in Columbia has risen from 400 to 27,000, not 2,700, as was printed in a letter recently. There are some lepers in or around this city, but we cannot say how many, and we are disinclined to print any more leprosy statistics for the present, until the tencency of ciphers to displace themselves has been overcome.—*Medical Record.*